ARJUNA JEE 2023

Mole Concept

DPP-10

1. Find number of moles of oxygen require for complete combustion of 1 mole of propane?
(1) 1 (2) 3
(3) 5 (4) 7

2. If 300 g of $CaCO_3$ on reaction with excess of H_2SO_4 gives 272 g of $CaSO_4$. Find the % age yield of product?
(1) 66.66% (2) 33.33%
(3) 50% (4) 25%

3. Find maximum moles of CCl_4 formed when 10 moles of CH_4 undergoes chlorination with excess of chlorine:
$1CH_4 + 4Cl_2 \rightarrow 1CCl_4 + 4HCl$
(1) 2 moles (2) 5 moles
(3) 8 moles (4) 10 moles

4. 5 moles of A, 6 moles of Z are mixed with sufficient amount of C to finally produce F. Then find the maximum moles of F which can be produced. Assuming that the product formed can also be reused. Reactions are:
$A + 2Z \longrightarrow B$ .....(i)
$B + C \longrightarrow Z + F$ ....(ii)
(1) 3 moles (2) 4.5 moles
(3) 5 moles (4) 6 moles

5. 1.2 g of Mg (At mass 24) will produce MgO equal to:
(1) 0.05 mol (2) 40 g
(3) 40 mg (4) 4 g

6. Sulphur trioxide is prepared by the following two reactions:
$S_8(s) + 8O_2(g) \longrightarrow 8SO_2(g)$
$2SO_2(g) + O_2(g) \longrightarrow 2SO_3(g)$
How many grams of SO_3 are produced from 1 mol of S_8?
(1) 1280.0 (2) 640.0
(3) 960.0 (4) 320.0

7. According to the following reaction the minimum quantity in gm of H_2S needed to precipitate 63.5 gm of Cu^{2+} ions will be nearly
$Cu^{+2} + H_2S \rightarrow CuS + 2H^+$
(1) 63.5 g (2) 31.75 gm
(3) 34 gm (4) 20 gm

8. Butane, C_4H_{10}, burns with the oxygen in air to give carbon dioxide and water. What is the amount (in moles) of carbon dioxide produced from 0.15 mol C_4H_{10}?
$C_4H_{10}(g) + O_2(g) \longrightarrow CO_2(g) + H_2O(g)$
(1) 0.15 mol CO_2 (2) 0.30 mol CO_2
(3) 0.45 mol CO_2 (4) 0.60 mol CO_2

9. Enzymes convert glucose (M = 180.2) to ethanol (M = 46.1) according to the equation
$C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$
What is the maximum mass of ethanol that can be made from 15.5 kg of glucose?
(1) 0.256 kg
(2) 0.512 kg
(3) 3.96 kg
(4) 7.93 kg

10. In the following set of reactions,
$CaCO_3 \xrightarrow{\Delta} CaO + CO_2$ (75% yield)
$CO_2 + \xrightarrow{\Delta} 2CO$ (50% yield)
CO formed at STP from 10 g of $CaCO_3$ is
(1) 2.24 L (2) 11.2 L
(3) 1.12 L (4) 1.68 L

Answer Key

1.	(3)	6.	(2)
2.	(1)	7.	(3)
3.	(4)	8.	(4)
4.	(3)	9.	(4)
5.	(1)	10.	(4)

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